

User's Guide

ViewSonic E655

Multi-Frequency Color CRT Display

15" (13.8" Viewable) Color Monitor
with Flat Square Screen

ViewSonic® Corporation

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For your records

The serial number of this product is on the back of the monitor. Write the serial number in the space below and keep this guide as a permanent record of your purchase to aid in identification in the event of theft or loss.

Product Name: **ViewSonic E655**

Model Number: **E655**

Serial Number: _____

Purchase Date: _____

LIMITED WARRANTY

VIEWSONIC E655 MONITORS

What the warranty covers:

ViewSonic warrants its products to be free from defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, **ViewSonic** will at its sole option repair or replace the product with a like product. Replacement product or parts may include remanufactured or refurbished parts or components.

How long the warranty is effective:

ViewSonic E655 color monitors, including the display tubes, are warranted for three (3) years for all parts and three (3) years for all labor from the date of the first consumer purchase.

Who the warranty protects:

This warranty is valid only for the first consumer purchaser.

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What the warranty does not cover:

1. Any product on which the serial number has been defaced, modified or removed.
2. Damage, deterioration or malfunction resulting from:
 - a. Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
 - b. Repair or attempted repair by anyone not authorized by **ViewSonic**.
 - c. Any damage of the product due to shipment.
 - d. Removal or installation of the product.
 - e. Causes external to the product, such as electric power fluctuations or failure.
 - f. Use of supplies or parts not meeting **ViewSonic**'s specifications.
 - g. Normal wear and tear.
 - h. Any other cause which does not relate to a product defect.
3. Removal, installation, and set-up service charges.

How to get service:

1. For information on obtaining warranty service, call **ViewSonic**. The customer support telephone numbers are: U.S. and Canada 1-800-688-6688; from outside the U.S. and Canada 909-869-7976; from Europe 011-44 (1) 293-643-900; from Asian /Pacific Rim countries 886 (2) 248-4072. Internet E-Mail address:vstech@viewsonic.com or World Wide Web:<http://www.viewsonic.com>
2. To obtain warranty service, you will be required to provide (a) the original dated sales slip, (b) your name, (c) your address, (d) a description of the problem, and (e) the serial number of the product.
3. Take or ship the product prepaid in the original container to your **ViewSonic** dealer, any **ViewSonic** service center or **ViewSonic**.
4. For additional information or the name of the nearest **ViewSonic** service center, contact your **ViewSonic** dealer or **ViewSonic**.

Limitation of implied warranties:

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusion of damages:

VIEWSONIC'S LIABILITY IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. **VIEWSONIC** SHALL NOT BE LIABLE FOR:

1. DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE WITH BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH D

Safety Guidelines

Caution: Use a power cable that is properly grounded. Always use the AC cords listed below for each area:

USA	UL
Canada	CSA
Germany	VDE
Switzerland	SEV
Britain	BASEC/BS
Japan	Electric Appliance Control Act

In other areas, use AC cord which meets local safety standards.

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ViewSonic E655

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es of Purchase

ns on your purchase of an **ViewSonic E655** high performance

nic **E655** package includes the following:

ViewSonic E655 monitor

Attached video cable with 15 pin high density (HD) mini D-sub connector

Power cord

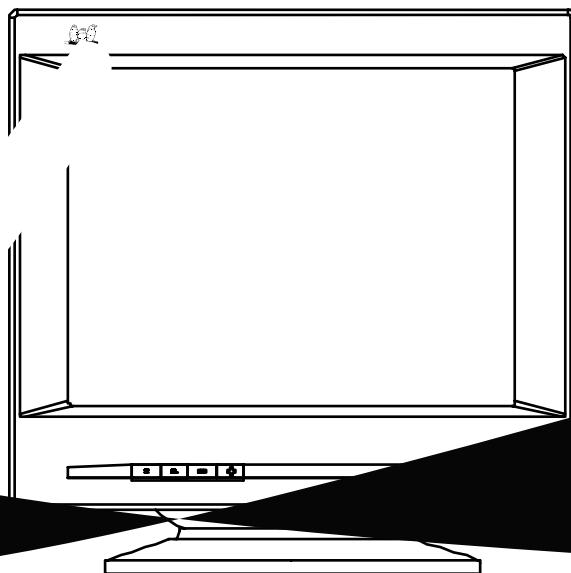
User's guide

Software diskette or CD ROM which includes:

- ◆ Opti-Green® for Windows® 3.1x and DOS (monitor power saving software).
- ◆ ViewSonic® monitor installation file (*VS*.inf*) for Windows® 95 (required for *Plug & Play*. See pages 69 and 70).
- ◆ DDCTM (Display Data Channel) diagnostic utility *DDCTEST.EXE*. This file is used for analyzing the DDC, a communication protocol for Windows 95 (See page 70).

original box and all packing material for future shipping needs.

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Features

Superior Image ...

- **OnView® control system** allows you to visually adjust screen images using on screen displays.
- **Invar Shadow Mask** for superior focus, brightness, and color.
- **Microprocessor-based controls** save your adjustments for each video mode. There is no need to make adjustments every time you use your computer.

Ergonomic Design ...

- **Anti-glare coating** reduces eye strain.
- **Flat, square screen** cuts down on image distortion and glare, relieving eye strain.
- **Tilt base** allows 180° rotation horizontally and 20° vertically for greater user comfort.
- **Low-frequency magnetic field prevention and electrostatic charge** reduction meets strict MPR-II emissions standards for increased user safety.

Precision Timing ...

- **True multi-scanning** ability allows automatic tracking of horizontal frequencies from 30 to 65 kHz and vertical frequencies from 50 to 100 Hz.
- **10 factory preset video modes** are available for image size and positioning.
- **6 additional timings** are user definable for a total of 16 timing settings.

Specifications

CRT	Type	15"(13.8" viewable diagonal), 0.28mm dot pitch, 90° deflection	
	Glass surface	Phosphor RGB, P22, medium-short persistence anti-glare, anti-static coating TM= 57%	
Input Signal	Video Sync	RGB analog (0.7 Vp-p, 75 ohms) H/V separate (TTL) f_h : 30-65 kHz, f_v : 50-100 Hz	
Compatibility	PC	IBM® XT, AT, 386, 486, Pentium®, PS/2 and compatibles (from VGA up to 1280x1024 non-interlaced)	
	Macintosh®*	Power Mac	
Input/Output Connectors	Rear	Video-In	15-pin high density (H.D.) mini D-sub
		Power	3-pin plug (CEE2)
Power	Voltage	AC	90-264 V 50/60 Hz ± 3 Hz
	Consumption	AC	90 W (Max.)
User Controls/ Functions	Buttons	Power, Up Key, Down Key, Plus Key, Minus Key	
	OnView®	Contrast, Brightness, Horizontal Size (Width), Horizontal Position, Vertical Size (Height), Vertical Position, Pincushion, Trapezoid, Color Temperature, Reset, OSD Off	
	ViewMeter®	Display Frequency	
Video input	Bandwidth	110 MHz (typical)	
Misconvergence		0.30mm (max) at center 0.40mm (max) at corner	
Display Area	Factory setting	260mm (H) x 195mm (V) typical	(Dependent upon signal timing used)
	Large scan	282mm (H) x 210mm (V)	
Operating Conditions	Temperature	32°F to 104°F (0°C to 40°C)	
	Humidity	10% to 80% (no condensation)	
	Altitude	to 15,000 feet	
Storage Conditions	Temperature	-40°F to +140°F (-40°C to +60°C)	
	Humidity	0% to 90% (no condensation)	
	Altitude	to 50,000 feet	

Continued...

Specifications, continued

Dimensions	Physical	365mm (W) x 368mm (H) x 394mm (D) (14.4" x 14.5" x 15.5")
	Packing	473mm (W) x 463mm (H) x 499mm (D) (18.6" x 18.2" x 19.6")
Weight	Net	27.5 lbs (12.5 Kg)
	Gross	31.9 lbs (14.5 Kg)
Regulatory Agencies		UL, CSA, FCC-B, DHHS, MPR-II, TUV/GS, CE
Power savings LED modes	<i>On</i> <i>Stand By</i> <i>Suspend</i> <i>Off</i>	green orange orange orange
Other Features		Compatible with the Display Data Channel Standards DDC1™ and DDC2B™. Plug & Play +

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*A Macintosh® computer requires ViewSonic® Macintosh® adapter. Contact your local dealer or ViewSonic® for your free adapter. See Chapter 4 on Troubleshooting for a telephone number in your area.

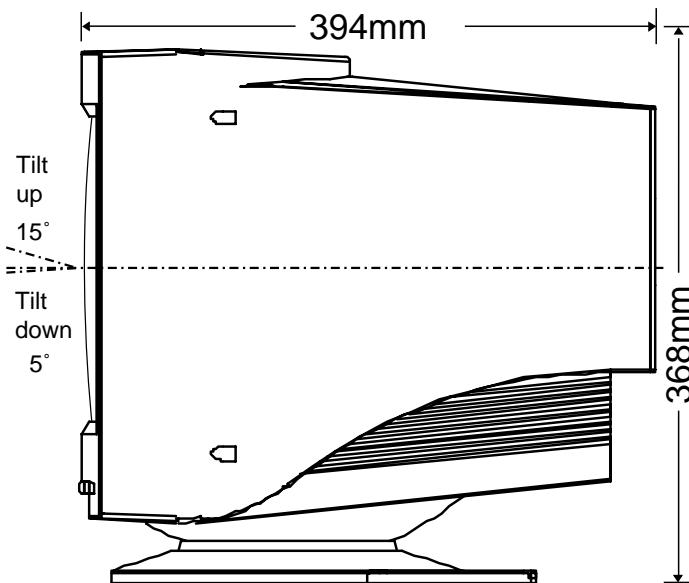
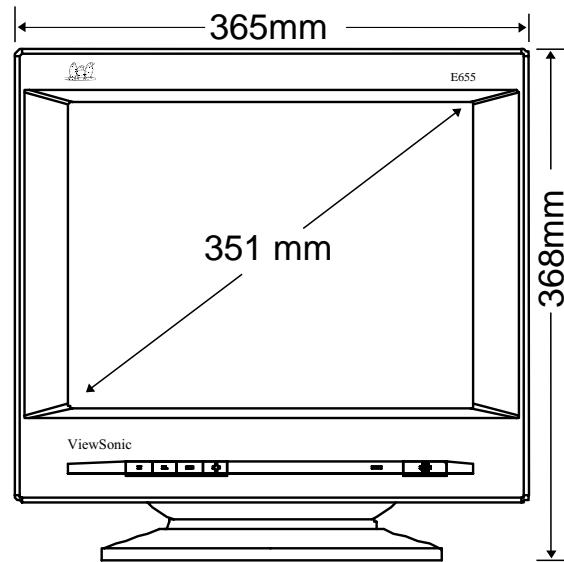
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Dimensions

Front View...

Width 365 mm (14.4")

Height 368mm (14.5")



Side View...

Depth 394mm (15.5")

Tilt

Up 15°

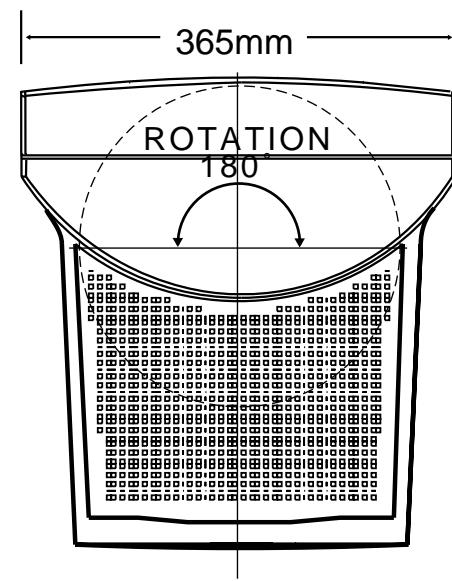
Down 5°

Top View...

Swivel Angle

LEFT 90°

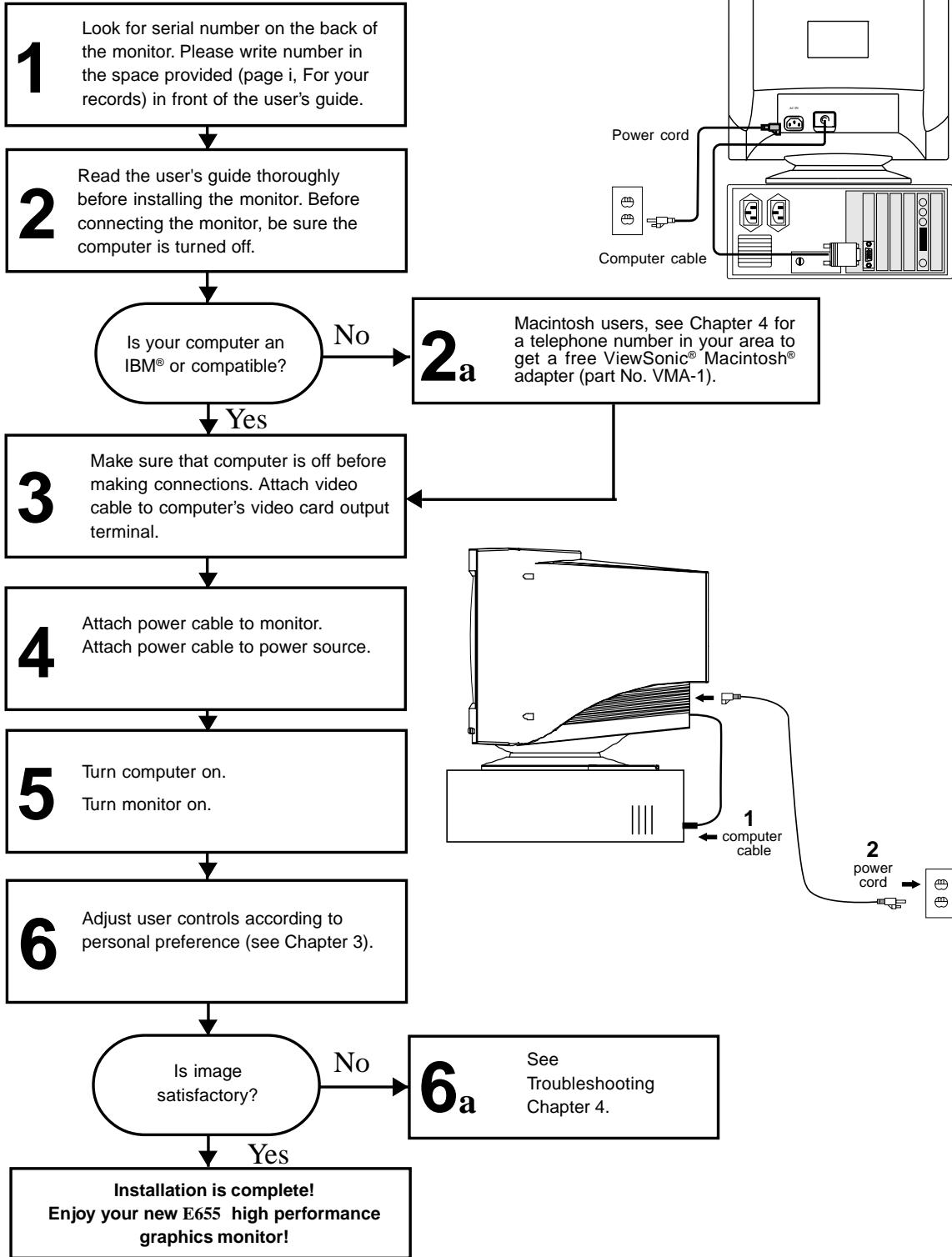
RIGHT 90°



INSTALLATION

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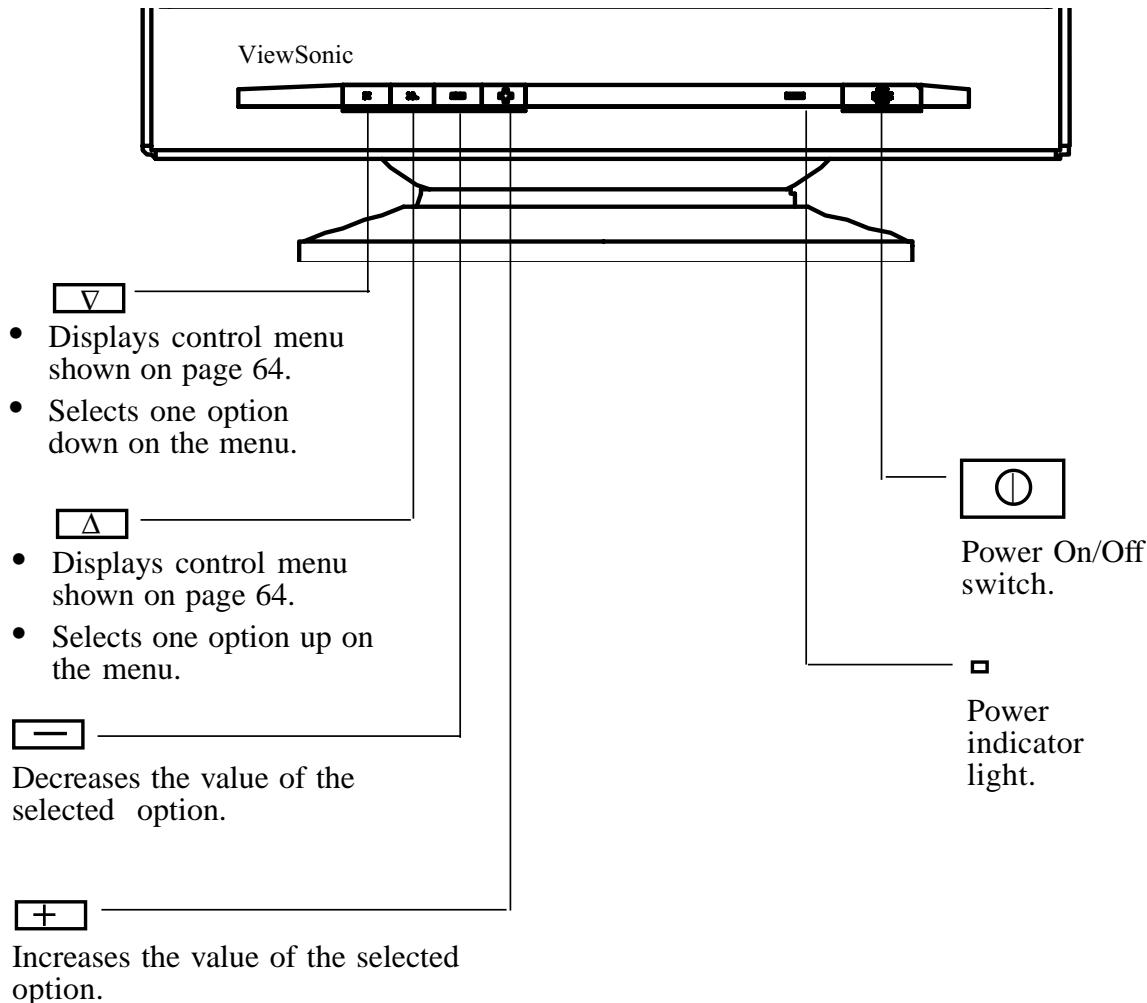
Power Up



OPERATION

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Monitor Controls



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Power On/Off Switch

Press the **Power Switch** shown above to turn the monitor on or off.

When the monitor is turned on, the power LED light is green.

When the monitor goes into power saving mode or is disconnected from a computer, the light turns orange.

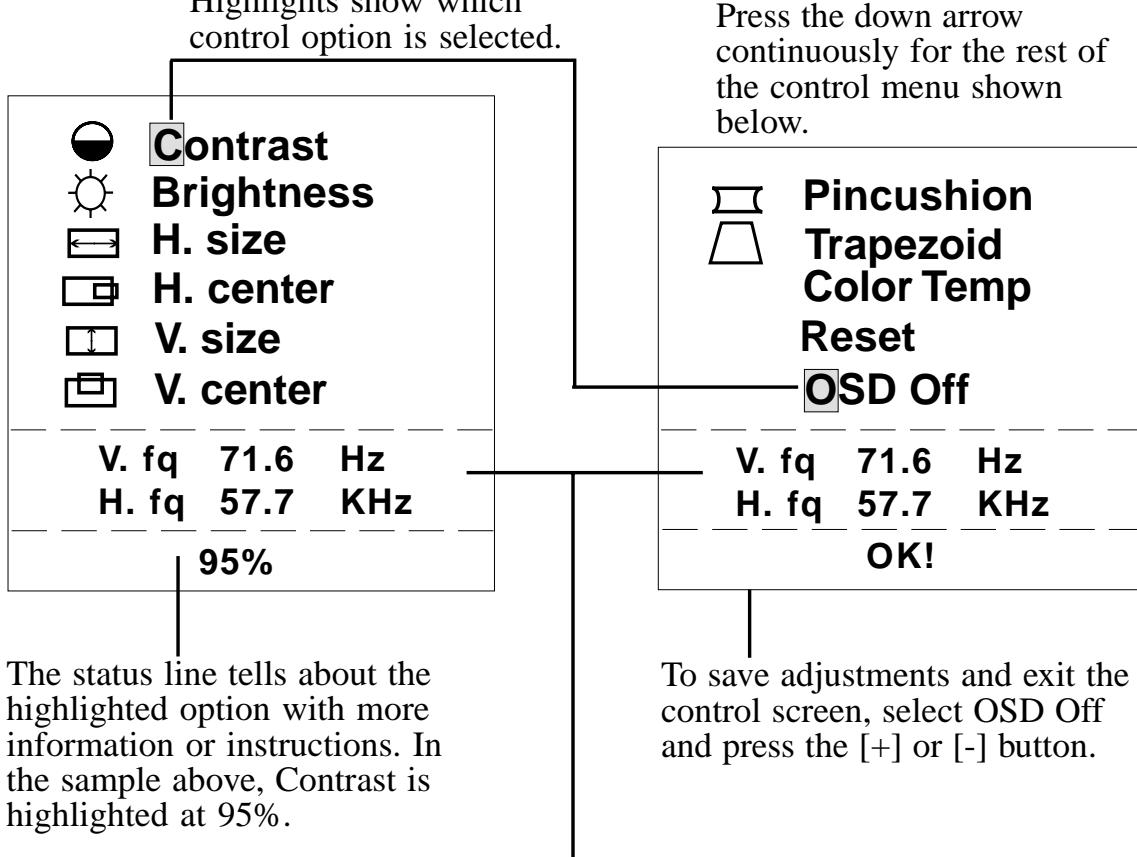
Adjusting the monitor

1. Press the down or up arrow to display the control menu (shown below).
2. Press the down or up arrow to select the option to adjust.
3. Press the [+] or [-] button to make adjustments to the **E655**.
4. a. Select OSD Off and press the [+] or [-] button. The status line will say "OK!"
b. Shortcut: After adjusting the **E655**, press the Select up and down arrows or the Adjust [+] or [-] buttons simultaneously.

Adjustments will be saved after adjusting the monitor, exiting the menu, and turning off the monitor.

Control Menu

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To save adjustments, press the [+] and [-] buttons simultaneously, or select OSD Off.

Contrast



The Contrast control adjusts the contrast between the background (black level) and the foreground (white level) of the screen image.

Press the minus [-] button to *decrease* the contrast of the image.

Press the plus [+] button to *increase* the contrast of the image.

Brightness



The Brightness control adjusts the image brightness, the background black level in an image.

Press the minus [-] button to *decrease* the brightness of the screen image.

Press the plus [+] button to *increase* the brightness of the screen image.

H. size (width)



H. size, horizontal size, adjusts the width of the screen image.

Press the minus [-] button to *decrease* the width of the screen image.

Press the plus [+] button to *increase* the width of the screen image.

H. centering



H. centering, horizontal centering, moves the screen image horizontally.

Press the minus [-] button to move the screen image to the *left*.

Press the plus [+] button to move the screen image to the *right*.

V. size (height)



V. size, vertical size, increases or decreases the height of the screen image.

Press the minus [-] button to *decrease* the height of the screen image.

Press the plus [+] button to *increase* the height of the screen image.

To save adjustments, press the [+] and [-] buttons simultaneously, or select OSD Off.

V. center



V. center, vertical center, moves the screen image up or down.

Press the minus [-] button to move the screen image *down*.

Press the plus [+] button to move the screen image *up*.

Pincushion



Pincushion adjusts the straightness of the screen image's vertical edges.

Press the minus [-] button to curve the vertical edges *inward*.

Press the plus [+] button to curve the edges *outward*.

Trapezoid



Trapezoid adjusts for unevenness between the top and the bottom of the screen image.

Press the minus [-] button to make the screen image *narrower at the top* and wider at the bottom.

Press the plus [+] button to make the screen image *wider at the top* and narrower at the bottom.

Color Temp

This control adjustst the color temperature of the screen image 9300°K is bluer and brighter than 6500°K which is redder and closer to "paper white."

Press the plus [+] or minus [-] button to select the desired temperature.

OSD Off

Select the OSD Off option and press the [+] or [-] button to save adjustments when turning off the monitor. The status line will say "OK!"

Reset

Select the Reset option and press the [+] or [-] buttons to restore settings that were set at the factory.

Timing Chart

The **ViewSonic E655** digital monitor can run at an extensive range of resolutions and refresh rates. Certain standard resolutions are factory preset. There are also 16 timings which are user definable. For example, if your video card is set up to run 1024 pixels x 768 lines at an 80 Hz refresh rate, once you have adjusted the screen size and position to your preferences, the monitor will save this information to memory. Every time you run this resolution at this refresh rate, the monitor will recall your adjustments.

The following table lists the maximum refresh rates at which the **ViewSonic E655** will operate at a number of standard resolutions. While the monitor is capable of this level of performance, not all video cards are capable of running at these high refresh rates. Please see your video card user's guide to ensure compatibility.

Warning: Do not exceed the maximum refresh rate listed in the table below for your monitor. Doing so may result in permanent damage to the monitor. Some graphics cards support refresh rates higher than the monitor is capable of handling.

User Definable Timings

Resolution	Maximum Refresh Rate
pixels x lines	Hz
800 x 600	100
1024 x 768	81
1280 x 1024	61

Video Timing

The video timing mode is made up of three elements:

1. The resolution, which is the number of data pixels times the number of data lines that make up the screen.
2. The horizontal frequency, which is the speed that the electron beam travels across the screen, left to right.
3. The vertical frequency, or refresh rate, which is the speed that the electron beam finishes all the rows in the screen and returns to the top.

Factory Preset Timings

The following table lists the factory preset timings:

	Resolution	Horizontal Frequency	Vertical Frequency	Signal Polarity	
Timing	Pixels x Lines	kHz	Hz	horiz/vert	
VGA	640x400@70Hz	640 x 400	31.47	70	-/+
VGA	640x480@60Hz	640 x 480	31.47	60	-/-
VESA	640x480@75Hz	640 x 480	37.50	75	-/-
VESA	640x480@85Hz	640 x 480	43.27	85	-/-
VESA	800x600@72Hz	800 x 600	48.08	72	+/+
VESA	800x600@75Hz	800 x 600	46.88	75	+/+
VESA	800x600@85Hz	800 x 600	53.67	85	+/+
VESA	1024x768@75Hz	1024 x 768	60.02	75	+/+
8514A	1024x768@ 87Hz	1024 x 768	35.52	87	+/+
VESA	1280x1024@60Hz	1280 x 1024	63.97	60	+/+

Note

Input timing should be within the horizontal and vertical frequency ranges in order to set the screen size and position. Before registering a new signal, check its horizontal and vertical timing specifications.

The factory preset timing is registered when the difference between the user definable timing and the factory preset timing is smaller than the allowable deviation; also, the polarity of their synchronizing signals must be the same.

Plug & Play +

Plug and Play + means it's easy to start using your new monitor. Because the monitor features the VESA® (Video Electronics Standards Association) DDC™ (Display Data Channel) standard, the monitor is self-installing when used with a DDC compatible video card.

DDC is a protocol which allows the monitor to communicate with the video card. The monitor sends the factory preset modes to the video card. Then, a table is created matching the maximum refresh rates of the monitor with those of the video card. When you choose a resolution in Windows® 95, the monitor will automatically run at its high refresh rate.

To use the DDC:

First turn on the computer.

Then turn on the monitor.

That's all. Some DDC compatible video cards will allow you to save the compatibility information in your AUTOEXEC.BAT file. If not, just be sure to turn on the computer before the monitor to activate the DDC.

Note

Some older computer systems are not compatible with the DDC standard. If your monitor is displaying a monochrome image or the wrong resolution, call ViewSonic's customer support for a non-DDC adapter. If you upgrade to a DDC compatible system later and want to use Plug & Play, just remove the adapter.

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DDC™ Diagnostic Utility

The **ViewSonic E655** uses DDC (Display Data Channel) protocol to communicate with your computer's video card. The software diskette or CD ROM included in the **ViewSonic E655** package has a utility file called *DDCTEST.EXE*. This utility is useful for troubleshooting if DDC-related problems occur when using Windows® 3.1 or Windows® 95.

When you run the DDC Diagnostic Utility, one of two messages will appear:

1. If the utility detects that DDC is functioning, the following appears:

*ViewSonic/Optiquest Plug & Play monitor: E655 successfully detected.
Hit any key to read and decode the EDID information... (ESC to exit)*

If you hit a key, you will see information about the monitor. This information is a table of EDID codes (Extended Display Identification) and an explanation of the codes. Press ESC to exit then:

- a. Check if DDC is enabled in Windows. Refer to the *README.TXT* file on the ViewSonic® diskette or CD ROM for instructions on how to enable DDC in Windows.
- b. Install the ViewSonic *MONITOR.INF* file (included on the ViewSonic diskette or CD ROM). Refer to the *README.TXT* file on the ViewSonic diskette or CD ROM for installation instructions.

If Plug & Play still does not work after you have followed the procedure above, call ViewSonic Customer Support.

2. If the utility detects that DDC is not functioning, the following appears:

ViewSonic/Optiquest Plug & Play monitor was not detected

Exit the utility. Turn the monitor off. Wait ten seconds and turn the monitor on. Try the DDC Diagnostic Utility again. If you still receive the message that the monitor was not detected:

- a. Check your computer or graphics board manufacturer's user's guide to see if your graphics system is DDC compatible.
- b. Check the video cable connector for bent or broken pins.
- c. Refer to the *README.TXT* file troubleshooting section (included on the ViewSonic diskette).

If the procedure above does not work, call ViewSonic Customer Support.

Power Management System

This monitor meets VESA® DPMS™ (Display Power Management Signalling) standards. For the monitor's power saving feature to work, the video board or computer must also meet VESA DPMS standards.

State	LED	Power	Recovery Time
On	green	<90Watts	N/A
Standby	orange	<30 Watts	<3 sec
Suspend	orange	<8 Watts	<10 sec
Off	orange	<8 Watts	<10 sec

Note: The E655 complies with European NUTEK Power Management Standards.

Note: The Off state means the monitor is in the lowest DPMS state with the highest power savings.

The monitor goes into these power saving stages with the following video synchronization signals:

State	Horizontal Sync	Vertical Sync
On	On	On
Standby	Off	On
Suspend	On	Off
Off	Off	Off

The monitor automatically goes through the Power Management System steps when it is idle.

To conserve energy, we recommend turning off the monitor when not in use for long periods of time.

TROUBLESHOOTING

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If your **ViewSonic E655** monitor is not performing properly, use this troubleshooting chart for quick solutions to common problems. If the problem persists, call your monitor dealer. For further support or to order your free Macintosh adapter, call **ViewSonic®** customer support at the telephone number in your area:

U.S. and Canada only	1-800-688-6688
From outside U.S. and Canada	909-869-7976
From Europe	011-44(1) 293-643-900
From Asian/Pacific Rim countries	886 (2) 248-4072
Internet E-Mail:	vstech@viewsonic.com
World Wide Web:	http://www.viewsonic.com

Problem...	Possible Cause...	Remedy...
No picture	Power cord disconnected?	Connect power cord.
	Power switch off?	Turn on power.
	Faulty outlet?	Try another outlet.
	Monitor in power save mode?	Press any keyboard key.
	Computer or graphics card?	Check video card connections.
	Signal cable properly connected?	Connect signal cable properly.
	Signal cable connector?	Check connector for bent pins.
	Video sync signal?	Check if it's the video sync signal specified for the monitor.
	Using a Macintosh®?	Make sure the dip switch settings on your ViewSonic® Macintosh adapter are correct.

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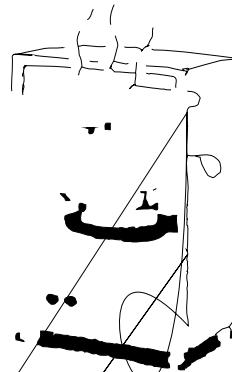
Problem...	Possible Cause...	Remedy...
Image is scrolling or unstable	Signal connector pin assignments incorrect? Signal cable properly connected? Graphics Board?	Use correct signal connector. Connect signal cable properly. Check for bent or missing pins. Check your graphics board manual for the proper monitor setting.
	Scanning frequency outside acceptable range?	Reconfigure the graphics board.
Image is not centered, too small or too large	Horizontal, vertical positioning or horizontal, vertical size?	Adjust the horizontal, vertical positioning and size controls.
Characters appear dark	Brightness and contrast at minimum?	Adjust brightness and contrast.
Color is not pure	Build-up of magnetic fields within the monitor? Magnetic object nearby?	Turn the monitor off, then on. This clears, degausses the magnetic fields. Reorient object or monitor.
	Signal connector pin assignments incorrect?	Use correct signal connector.
	Signal cable properly connected?	Connect signal cable properly.
Image bounces or has wavy oscillations	Magnetic object nearby? Electric power wiring?	Reorient object or monitor. Your office may have electric power wiring behind the wall. Move the monitor.
Image is distorted	Is the earth's magnetic field interfering with display?	Face monitor east for best image quality.

ADDITIONAL INFORMATION

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Helpful Hints

- Avoid exposing the monitor to direct sunlight or other heat source. The monitor should be facing away from direct sunlight to reduce glare.
- Choose a well ventilated area to position your monitor to allow adequate dissipation of heat. Do not place anything on top of the monitor.
- Ensure the monitor area is clean and moisture free.
- Keep the monitor away from magnets, motors, transformers, speakers, and televisions.
- Do not place heavy objects on the cable or power cord.
- Sit at least 18" from the monitor.



Safety Tips

- If smoke, abnormal noise, or strange odor is present, immediately switch the monitor off and call your dealer. It is dangerous to continue using the monitor.
- Never remove the rear cover. The display unit contains high-voltage parts. You may suffer electric shock if you touch these parts. Call your dealer or **ViewSonic® Customer Support**.

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Care of Your Monitor

- When cleaning the monitor screen, use only non-ammonia based glass cleaners. Apply the cleaning solution to a clean, dry cloth, not directly to the screen.
- When cleaning the plastic case, use only a soft, dry cloth. If the plastic is very dirty, use a neutral, non-abrasive detergent. Do not use alcohol or ammonia based solutions.
- Avoid spilling liquid on the monitor.
- Always handle your monitor with care when moving it.

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